Exemption No. 6698A

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
RENTON, WASHINGTON 98055-4056

In the matter of the petition for reconsideration of **Triad International Maintenance Corporation (TIMCO)**

for exemption from 14 CFR § 25.807(c)(1)

Regulatory Docket No. 28824

PARTIAL GRANT OF EXEMPTION

By letters dated December 3, 1997, and January 14, 1998, Mr. Rick Salanitri, Director of Structures Engineering, TIMCO, 623 Radar Road, Greensboro, NC 27410, petitioned the FAA for reconsideration of a denial of exemption from the requirements of § 25.807(c)(1), to allow deactivation of the existing passenger emergency escape exit door R1 on Boeing 767-200 aircraft converted by TIMCO from a passenger to an all-freighter configuration with accommodations for up to four supernumerary occupants in the flight deck area forward of the main deck Class E cargo compartment.

Affected Sections of the FAR:

> Section 25.807(c)(1), as amended by Amendment 25-39, requires in pertinent part that a minimum of one Type IV emergency exit be installed in each side of the fuselage for passenger seating configurations of one through nine. (This section further requires, in paragraph (a)(4), that a Type IV exit must be not less than 19 inches wide by 26 inches high, be located over a wing, and with a step-up inside the airplane of not more than 29 inches and a step-down outside the airplane of not more than 36 inches.)

ANM-98-011-E

Related Sections of the FAR:

Section 25.857(e), as amended by Amendment 25-32, defines the attributes of a Class E cargo compartment, and requires that a Class E cargo compartment may not be on any aircraft other than one utilized exclusively for the carriage of cargo (i.e., occupants other than flightcrew not permitted).

14 CFR 121.583 provides, in pertinent part, that when authorized, certain persons other than passengers may be carried aboard an airplane not in compliance with certain passenger-carrying requirements including those described in §§ 121.310 and 121.317.

The petitioner's supportive information is as follows:

Triad International Maintenance Corporation (TIMCO) hereby respectfully petitions for reconsideration of Exemption No. 6698, Regulatory Docket No. 2884, issued November 13, 1997. Exemption No. 6698 provided a partial grant of exemption to allow the carriage of up to four persons in addition to two crew members in the TIMCO 767-200 Package Carrier (PC) flight compartment. The TIMCO petition for exemption to the exit requirements of § 25.807(c)(1) was not granted. Specifically, the FAA determined the R1 door was required to remain active, but inertia reels could be installed to replace the R1 escape slide.

As provided in § 11.55(a), TIMCO requests reconsideration of the denial to the petition for exemption to the requirements of § 25.807(c)(1) based on the following:

As specified in § 11.55(d)(3), a petition for reconsideration may be based on an additional fact relevant to the decision that was not presented in the initial petition for exemption provided the petitioner states the reason the additional fact was not presented in the original petition.

"ADDITIONAL FACTS THAT WERE ORIGINALLY OMITTED

"1. ADDITIONAL BACKGROUND INFORMATION

"The following background information was not contained in the original petition for exemption. The information set forth below more completely explains the basis by which ABX Air, Inc., the airline subsidiary of Airborne Express, selected the B767-200 aircraft. This additional information is necessary to any determination regarding the deactivation of the R1 door, but was not emphasized in the original petition. After issuance of Exemption No. 6698, TIMCO consulted with its customer, ABX Air, Inc. (ABX), and jointly determined that additional background information would be necessary for the FAA to achieve a complete understanding of ABX's aircraft configuration.

"Unlike other integrated cargo carriers, the ABX Air cargo system does not utilize a main deck cargo door. Main deck cargo is loaded through the L1 main entry door utilizing

ABX Air 'C' containers which are 34 inches wide by 60 inches long by 72 inches tall (Figure 1 and 2). [available in the Docket] The 'C' containers roll on casters, and are capable of carrying up to 1100 lbs. each, and are designed to be located in any available location on the main deck, and fit on any ABX 767-200PC. By using only one type of container on the main deck, ABX avoids having to stock and maintain various sized containers and costly loading equipment at each city served by their system.

"ABX chose the 767-200 for their new cargo airplane only after an exhaustive study of several different aircraft models (A300-B4, DC10-10, and 767-200). The final decision on which aircraft to select was based principally on an optimum combination of the following factors: cargo capacity, price, operating costs, maintenance costs, and product support. The B767-200 was chosen only after determining, in consultation with the manufacturer, that the aircraft could carry a minimum of 102 main-deck, ABX Air 'C' containers. Any lesser quantity of containers changes the optimum combination for the B767-200PC, and thus becomes a financially and operationally unsuitable alternative when compared to other aircraft.

"During the decision-making process, a study was accomplished to determine whether 104 containers with a rigid barrier, or 102 containers with a cargo net was more economical. Due to the weight of a rigid barrier (estimated to be 2100 lb.), and because the 767 is weight-limited, this option was discounted since the rigid barrier weight negates the additional cargo capacity. Therefore, the optimum main deck cargo configuration is 102 containers, which has become a basic and inherent characteristic of the ABX 767-200PC aircraft.

"2. DOOR PRESERVATION PROVISIONS"

The 767-200PC L1 door has unique design features to insure operation after a 9g event. In the absence of a grant of TIMCO's petition, these features would also need to be incorporated into a retained R1 door. Originally, the main-deck cargo configuration had five containers in the first row. It was quickly determined that this design was not feasible, since during a 9g event, the distended cargo net impacted the L1 door's slide bustle and mechanisms, thereby rendering the door inoperable for egress.

"To eliminate the interference with the door bustle and door operating mechanisms in a 9g event, a partial rigid barrier was installed on the left-hand side, and the A1 container was relocated to the transverse location centered at BL 0.0 (Figure 4, Container A1). [available in the Docket] However, it was again determined that the distended cargo net impacted L1 door operating mechanisms, and did not provide proper clearance for egress."

To further eliminate interference with door mechanisms, and to provide a passageway to the L1 door for egress, the forward, transversely located container was shifted further toward the right-hand side. In this configuration, the cargo net does not impact the L1 door-operating mechanisms or compromise access to the L1 door. This design became the final configuration, and was the one which was shown in TIMCO's original petition for exemption.

An open space aft of the R1 door equivalent in size to that aft of the L1 door would have to be provided to maintain egress through the R1 door after a 9g event. Therefore, if the R1 door is to be maintained active, a minimum of two cargo container positions would have to be eliminated, and a partial rigid barrier similar to the one on the left-hand side would have to be installed on the right-hand side.

"3. DESIGN FEATURES

"A. R1 DOOR AFT TRACK"

The containers are loaded in a configuration that uses all available space on the main deck. The forward edge of the forward row of containers is located at BS 344.7. The outboard edge of the A5 container is at RBL 86.28. In this position, the A5 container interferes with the aft door track support brackets, and therefore, the track must be removed. There are two primary support brackets on the aft side on the R1 door aft track that directly interfere with this container. These brackets attach the aft track to the fuselage frame, thus providing the necessary out-of-plane support for the door's aft track. Redesign of these support brackets is not possible due to lack of available space with the A5 container installed. In addition to these support brackets, the container interferes with the door uplatch mechanism and its supporting brackets, so these must be removed as well. With these features removed, the door's aft track is unsupported, making R1 door inoperable. Under these circumstances, the R1 door must be deactivated in order to accommodate the 102-container configuration.

"B. 9g NET ATTACHMENTS

"On the right-hand side, the 9g net has been designed such that it attaches to structural tension straps located at BS 344, and directly interferes with the door aft track. The net attachment is located just forward of the cargo containers to allow installation of the cargo net with cargo in place. It is not possible to locate these net attachments further aft without removing the A5 container (Figure 6). [Available in the Docket] The door track is attached to the door's edge frame, and its profile extends inboard of the door's edge frame. Deactivation of the door will remove the door's aft track without affecting the structural integrity of the fuselage frame, and eliminate interference with the net's attachment fittings.

"4. SMALLER CONTAINER OPTION (A5 POSITION)

"Given the R1 door's aft track interference with the ABX 'C' container (discussed in item 3 above), TIMCO has studied an option to install a smaller container in the A5 position, thus allowing retention of the R1 door without loss of this container position." This information was not submitted in the original petition because TIMCO had not considered this option at that time.

"The study revealed that it is operationally unmanageable to utilize a smaller, unique container in the A5 container position to clear the door track attachment brackets or cargo net attachments.

ABX would be required to maintain and stock this unique container at every transfer station, adding additional operating costs. Also, the existing 767 loader will not accommodate a smaller, unique container, requiring ABX to maintain a second loader at each transfer station serviced by the ABX 767 to be used for this one main-deck container. ABX transfers containers at several facilities, and loading/unloading of this one unique container will disrupt operations and potentially delay package shipment.

"5. INERTIA REEL INSTALLATION"

Another fact relevant to this petition for reconsideration is TIMCO's recent decision to install inertia reels on the flight deck. This information was not submitted with the original petition because TIMCO's design had not progressed to this point. The inertia reels will be able to provide sequential or simultaneous egress through either the right-hand or left-hand No. 2 flight-deck windows (same as with ropes). It has been demonstrated on other freighter aircraft that inertia reels are more convenient and easier for crew members to use than the ropes currently provided at the flight deck windows. Another benefit of inertia reels, when utilized with harnesses, is the enhanced ability to evacuate an incapacitated person. TIMCO proposes to accomplish an FAA-approved evacuation test of the flight deck, thereby demonstrating safe egress from the flight deck windows.

"PUBLIC INTEREST

"Deactivation of R1 door is in the public interest for several of reasons. First, by deactivating the R1 door, ABX Air will be able to utilize the B767-200PC as its future cargo-hauling aircraft carrying the full payload that has been established as a basic operational requirement. Denial of this grant will result in the elimination of a minimum of two cargo containers (A1 & A5, potentially A2-A4), thus creating an undue economic hardship on Airborne Express. Assuming a 20-year life for a modified B767-200 aircraft, this loss of container capacity would result in $40 million of lost revenue. If extended over the 25 B767 aircraft that ABX now plans to purchase, (assuming the grant of this petition) it would equate to $1 billion of lost cargo revenue in an industry where competitors compete for fractions of a percent market share. Deactivation of the R1 door will permit Airborne to enjoy the full cargo-carrying capacity of the ABX 767-200PC. This is critical to the successful marketing of the services of Airborne, which offers the lowest rates of the major U.S. integrated cargo carriers. Hence, Airborne acts as a significant competitive spur to carriers such as FedEx and UPS. Deactivation of the R1 door allows full retention of the aircraft's cargo capability, which will permit Airborne to maximize its revenues, thus enabling it to better compete in the market place. It is in the public interest to maintain competition in the package freight industry as this translates to lower rates to the shipping public.

"Secondly, as passenger airplanes age, many enter into their next life as freighters. To do so, they are converted from a passenger configuration to a cargo configuration. Most of these older airplanes are subsequently replaced with new, passenger-carrying airplanes meeting the latest safety rules. This ongoing 'trade-up' to newer airplanes meeting the later safety rules is in the

public interest, and a grant of the petition will facilitate the process by which cargo carriers such as ABX and others provide a ready market for older passenger aircraft.

"CONCLUSION"

TIMCO is requesting that the FAA reconsider its denial of TIMCO's petition for a grant of exemption from the requirements of § 25.807(c)(1), since there were several facts relevant to the decision that were not adequately presented in the original submittal, for reasons set forth herein. "As discussed above, the 767-200PC is a viable aircraft for ABX Air only with a minimum of 102 'C' containers loaded on the main deck. Retention of the R1 door would require a reduction in payload by at least two containers, such that: (a) the interference between the A5 container and the R1 aft door track is eliminated, and; (b) to allow a proper egress path to the R1 door for evacuation after a 9g event.

"It is in the public interest to allow deactivation of the R1 door, since this will: (a) increase the market for newer passenger airplanes meeting the latest safety standards, and; (b) decrease the cost to the public for delivery of packages.

"Finally, an overall level of safety is maintained by the addition of inertia reels on the flight deck which can be used for egress through either the left-hand or right-hand flight deck windows, with retention of the passenger escape slide at the L1 door. Boeing has previously substantiated to the FAA's satisfaction that two cockpit window exits with escape ropes and an L1 passenger entry door with an inertia reel provide an adequate escape method for up to seven occupants (two crew members and five supernumeraries, ref. Exemption No. 5993A)." TIMCO requests that FAA take into consideration that TIMCO has made the decision to install inertia reels on the flight deck. The FAA has previously determined that inertia reels provide at least an equivalent level of safety to that provided by an escape slide (ref. Exemption Nos. 4808A and 5993A). The ABX-configured aircraft will also benefit from the use of an automatically deployed dual-lane escape slide at the L1 door. In combination, the ABX 767-200PC's emergency exits and escape means provide an acceptable and equivalent level of safety for the two crew members and four supernumeraries when compared to the number of individuals and escape means previously found acceptable by the FAA.

A summary of TIMCO's petition for reconsideration was published in the Federal Register on February 3, 1998 (63 FR 5601). No comments were received.

The FAA's analysis/summary is as follows:

The FAA notes the petitioner's more comprehensive description of their design, as well as a discussion of possible alternatives, than had been provided previously. The FAA concurs that, at this late point in time, the redesign and recommitment's necessary to provide compliance with the regulations from which exemption is sought would likely represent a considerable hardship to both the petitioner and its customers.

Be that as it may, however, in the interest of assuring an acceptable level of safety, the FAA has evaluated TIMCO's petition for reconsideration with a view toward the effect of the proposed design vis-à-vis a design that would fully comply with regulatory requirements.

An existing floor-level exit with slide/raft is proposed for retention on only one side of the fuselage, and not on both sides of the fuselage, as is the case with all other passenger-to-freighter conversions that have been approved as a part of the required exemption process. The resulting configuration does not comply with the requirements of § 25.807(c)(1) because it does not include the minimum Type IV exit, with the associated egress characteristics, on both sides of the fuselage. In lieu of providing that minimum Type IV exit on the right-hand side of the fuselage, or in lieu of retaining the existing Type A-sized exit with escape slide/raft on that side, the petitioner proposes utilizing the right-hand cockpit window, and proposes replacing or supplementing the existing cockpit ropes with inertia reels.

As a result of the proposed design change, the right-hand emergency egress capability is reduced from that retained on other typical passenger-to-freighter conversions (i.e., Type I or A-sized exits with escape slide), and is also reduced from the minimum regulatory requirements (i.e., a Type IV overwing exit of 19" x 26" dimensions, with an inside step up not to exceed 29 inches and a step down outside the airplane not to exceed 36 inches). However, the resulting left-hand emergency egress capability is considerably enhanced from the minimum required and is consistent with other passenger-to-freighter conversions.

The practical effect of this reduced evacuation capability is that, in the unlikely event that the primary exit (left-hand forward door) is blocked or otherwise rendered unusable, egress would be through the cockpit window. Normally, due to the relatively high sill height of the 767 cockpit window, and the 17-foot drop outside the airplane, only the flightcrew negotiate this escape route by the use of ropes. However, in order to reduce the detrimental effect of this proposed means of egress, the petitioner has proposed replacing or supplementing the ropes with inertia reels, for use at either or both cockpit windows. The FAA considers this a very favorable aspect of the proposal, and also considers it to enhance egress capability out of the cockpit over that offered on most other aircraft in service.

With regard to the capability for evacuating incapacitated occupants, as compared to what would be available with a minimally compliant configuration, the left-hand exit with escape slide is considered to provide a superior capability. Evacuating an incapacitated occupant out through the right-hand cockpit window is now possible with inertia reels and harnesses instead of ropes, though it would be more difficult than using the escape slide. Nevertheless, the FAA considers this an important capability that should not be lost.

Accordingly, it shall be a condition of this exemption that the petitioner shall: (1) include harnesses with inertia reels for each occupant, as required emergency equipment; (2) develop emergency evacuation procedures which include providing for the evacuation of an incapacitated occupant out the right-hand cockpit window; and (3) shall demonstrate these procedures, in accordance with an FAA-approved test plan, to the satisfaction of the cognizant FAA Aircraft Certification Office (ACO).

In consideration of the foregoing, I find that a partial grant of exemption is in the public interest, and is determined to not have a significantly adverse effect on the level of safety provided by the regulations. Therefore, pursuant to the authority contained in §§ 313(a) and 601(c) of the Federal Aviation Act of 1958, delegated to me by the Administrator (14 CFR 11.53), TIMCO's petition for exemption from the requirements of § 25.807(c)(1), which would allow deactivation of the R1 emergency exit door, and removal of the associated existing escape slide/raft, as part of a TIMCO modification of Boeing 767-200 passenger aircraft into freighter aircraft with Class E cargo compartments, including the added accommodation of up to two supernumeraries (in addition to two existing observer-seat accommodations which may be utilized for supernumerary seating) in the flight deck area, is granted subject to the following three conditions:

> The petitioner shall: (1) include harnesses with inertia reels for each occupant, as required emergency equipment; (2) develop emergency evacuation procedures which include providing for the evacuation of an incapacitated occupant out the right-hand cockpit window; and (3) shall demonstrate these procedures, in accordance with an FAA-approved test plan, to the satisfaction of the cognizant FAA Aircraft Certification Office (ACO).
>
> Other provisions of Exemption No. 6698, together with its conditions and limitations, remain the same and are applicable to this exemption. This amendment is part of, and shall remain attached to, Exemption No. 6698.

Issued in Renton, Washington, on May 1, 1998

/s/ Stewart R. Miller
Stewart R. Miller
Acting Manager, Transport Airplane Directorate
Aircraft Certification Service, ANM-100